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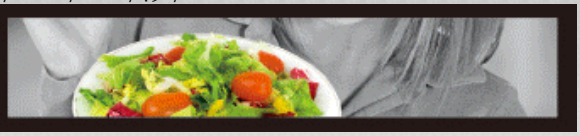

Moore and More

by nickland @ Wednesday, 11 May 2011 12:10

Doubling down on Moore's Law is the futurist main current

Cycles cannot be dismissed from futuristic speculation (they always come back), but they no longer define it. Since the beginning of the electronic era, their contribution to the shape of the future has been progressively marginalized.

The model of linear and irreversible historical time, originally inherited from Occidental religious traditions, was spliced together with ideas of continuous growth and improvement during the industrial revolution. During the second half of the 20th century, the dynamics of electronics manufacture consolidated a further – and fundamental – upgrade, based upon the expectation of continuously accelerating change.

The elementary arithmetic of counting along the natural number line provides an intuitively comfortable model for the progression of time, due to its conformity with clocks, calendars, and the simple idea of succession. Yet the dominant historical forces of the modern world promote a significantly different model of change, one that tends to shift addition upwards, into an exponent. Demographics, capital accumulation, and technological performance indices do not increase through unitary steps, but through rates of return, doublings, and take-offs. Time explodes, exponentially.

The iconic expression of this neo-modern time, counting succession in binary logarithms, is Moore's Law, which determines a two-year doubling period for the density of transistors on microchips ("cramming more components onto integrated circuits"). In a short essay published in Pajamas Media, celebrating the prolongation of Moore's Law as Intel pushes chip architecture into the third-dimension, Michael S. Malone writes:

"Today, almost a half-century after it was first elucidated by legendary Fairchild and Intel co-founder Dr. Gordon Moore in an article for a trade magazine, it is increasingly apparent that Moore's Law is the defining measure of the modern world. All other predictive tool for understanding life in the developed world since WWII — demographics, productivity tables, literacy rates, econometrics, the cycles of history, Marxist analysis, and on and on — have failed to predict the trajectory of society over the decades … except Moore's Law."

Whilst crystallizing – *in silico* -- the inherent acceleration of neo-modern, linear time, Moore's Law is intrinsically nonlinear, for at least two reasons. Firstly, and most

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straightforwardly, it expresses the positive feedback dynamics of technological industrialism, in v
electronic machines continuously revolutionize their own manufacturing infrastructure. Better chi
better chips, in a spiraling acceleration. Secondly, Moore's Law is at once an observation, and a p

"[Moore's original] paper noted that the number of components in integrated circuits had double
of the integrated circuit in 1958 until 1965 and predicted that the trend would continue 'for at lea
has proved to be uncannily accurate, in part because the law is now used in the semiconductor in
planning and to set targets for research and development. … Although Moore's law was initially n
observation and forecast, the more widely it became accepted, the more it served as a goal for an
both marketing and engineering departments of semiconductor manufacturers to focus enormou
specified increase in processing power that it was presumed one or more of their competitors wo
regard, it can be viewed as a self-fulfilling prophecy."

Malone comments:

"... semiconductor companies around the world, big and small, and not least because of their resp
to uphold the Law — and they have done so ever since, despite seemingly impossible technical ar
Moore not only discovered Moore's Law, he made it real. As his successor at Intel, Paul Otellini, o
be the guy whose legacy is that Moore's Law died on his watch.'"

If Technological Singularity is the 'rapture of the nerds', Gordon Moore is their Moses. Electro-ind
forth and multiply, and to do so with a quite precisely time-specified binary exponent. In its adhe
integrated circuit industry is uniquely chosen (and a light unto the peoples). As Malone concludes

"Today, every segment of society either embraces Moore's Law or is racing to get there. That's be
they can get aboard that rocket — that is, if they can add a digital component to their business —
from the competition. That's why none of the inventions we Baby Boomers as kids expected to en
personal helicopters! ray guns! — have come true; and also why we have even more powerful too
Whatever can be made digital, if not in the whole, but in part — marketing, communications, ente
engineering, robotics, warfare, manufacturing, service, finance, sports — it will, because going di
Moore's Law. Miss that train and, as a business, an institution, or a cultural phenomenon, you die

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